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EXAMINER

GARCIA OTERO, EDUARDO

ART UNIT	PAPER NUMBER
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2123

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DATE MAILED: 04/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/510,629

Applicant(s)

HARTMANN, WILLIAM M.

Examiner

Eduardo Garcia-Otero

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2000 and 16 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 and 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION: Non-Final (first action on the merits)

Introduction

1. Title is: PROCESS FOR HIGH FIDELITY SOUND RECORDING AND REPRODUCTION OF MUSICAL SOUND.
2. First named inventor is: HARTMANN
3. Claims 1-20 have been submitted, examined, and rejected.
4. This is the first action on the merits.

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5. **Carver** refers to US Patent 4,309,570 (from IDS).
6. **Aronis** refers to US Patent 4,175,466.
7. **Logue** refers to US Patent 6,279,379.
8. **Sakai** refers to US Patent 6,526,849.
9. **Krauss** refers to US Patent 2,806,953.
10. **Sims** refers to US Patent 5,206,913.
11. **Tucker** refers to The Computer Science and Engineering Handbook, by Allen B. Tucker, CRC Press, ISBN: 0-8493-2909-4, 1996, pages 1557-1559.
12. **Illustrated Oxford Dictionary** refers to Illustrated Oxford Dictionary, Oxford University Press, 1998, ISBN 0-7894-3557-8, pages 270 and 667.
 - ensemble**: “a group of actors, dancers, musicians, etc., performing together...” page 270.
 - quartet**: “composition for four voices or instruments... the performers of such a piece”, at page 667.
13. **McGraw-Hill Dictionary** refers to The McGraw-Hill Dictionary of Scientific and Technical Terms, Fourth Edition, by McGraw-Hill Companies, Inc., ISBN 0-07-045270-9, 1989.
 - contact microphone**: “[ENG ACOUS] A microphone designed to pick up mechanical vibrations directly and convert them into corresponding electrical currents or voltages.”
 - scale**: “graduated series of musical tones ascending or descending in order of pitch according to a specified scheme of their intervals”.
14. **Webster** refers to Merriam-Webster’s Collegiate Dictionary, Tenth Edition, Merriam-Webster, 2000, ISBN 0-87779-708-0.

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ensemble: “concerted music of two or more parts... the musicians engaged in the performance of a musical ensemble”

octave: “a musical interval embracing eight diatonic degrees... a tone or note at this interval... the harmonic combination of two tones an octave apart... the whole series of notes, tones, or digitals comprised within this interval and forming the unit of the modern scale... the interval between two frequencies (as in an electromagnetic spectrum) having a ratio of 2 to 1”.

Request for Information

15. The Examiner requests copies of the following publications because they appear to be especially germane to the claimed invention. In responding to this request, where the document is a bound text or a single article over 50 pages, the request may be met by providing copies of those pages that provide the relevant subject matter. See MPEP 704.14. The Examiner requests:

16. **“Acoustics and Performance of Music”** by Jurgen Meyer, discussed at specification page 11 line 23.

Claim Rejections - 35 USC § 112- first paragraph- enablement

17. The following is a quotation of the first paragraph of 35 U.S.C. 112: The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

18. **Claims 10 and 16 are rejected under 35 U.S.C. 112, first paragraph**, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

19. Claim 10 states **“a means for simulating musician absorption of the audible sound waves”**. The specification does not adequately describe this term. The specification does discuss directional dependence of radiation leaving the instrument, but no means for simulating musician absorption is discussed.

20. Claim 16 states **“matching a system overall frequency response to a known overall frequency response**. The specification does not adequately describe this term. The specification merely states “is matched” at page 10 line 24, and merely states “match overall

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frequency response” at element 100 FIG 10. The specification does not describe how “matching” is performed. Similarly, Claim 16 terms “**matching a system asymmetrical system**” and “**approximating a system fine asymmetrical response**” are not adequately described.

Claim Rejections - 35 USC § 112-Second Paragraph-indefinite claims

21. The following is a quotation of the second paragraph of 35 U.S.C. 112: The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
22. **Claims 5, 16, 17, and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite** for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
23. Claim 5 states “**location governed by a cross-correlation function** as measured in different frequency bands”. This term is not adequately defined in the specification. Specification page 8 lines 4-6 merely state “The location of each contact transducer is governed by listening tests and cross-correlation function measurements in different frequency bands at different locations.” The “cross-correlation function” is not adequately defined, note that the specification does not contain any equations. The “listening tests” are not defined. And governing the “location of each contact transducer”, based on the function and the tests, is not adequately defined.
24. Claim 16 states “**matching a system overall frequency response to a known overall frequency response**. The specification does not adequately define this term. The specification merely states “is matched” at page 10 line 24, and merely states “match overall frequency response” at element 100 FIG 10. The specification does not define how “matching” is performed. Similarly, Claim 16 terms “**matching a system asymmetrical system**” and “**approximating a system fine asymmetrical response**” are not adequately defined.
25. Claim 17 states “selecting an instrument from the ensemble... playing scales on the instrument... simultaneously **generating a contact recording and a microphone recording based on the ensemble sound pattern**... comparing the spectral characteristics of the contact recording and the microphone recording”. It is not clear how a playing scales on single instrument can generate “a contact recording and a microphone recording based on the

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ensemble sound pattern". It appears that playing scales on a single instrument would be independent of the ensemble sound pattern. Further, it is not clear precisely how the contact and microphone recordings are compared.

26. Claim 19 states "**manually adjusting spectral characteristics** of the contact recording".

This term is not adequately defined. It is not clear which spectral characteristics are adjusted, and it is not clear how or why spectral characteristics of the recording are adjusted, and it is not clear what "manually" means when the contact recording consists of very complex analog or digital signals. Further, it appears that the contact recording should be an accurate and unmodified record of the measured contact vibrations.

Claim Interpretation

27. **The claim language is interpreted in light of the specification.** Limitations from the specification must not be imported into the claims, but definitions from the specification must be imported into the claims.

28. Claim 1 states "signal generation system for simultaneously generating contact recording signals based on vibrations", and Claim 5 states "contact transducer". These terms are interpreted as "contact microphones", which are defined by the McGraw-Hill Dictionary as "[ENG ACOUS] A microphone designed to pick up mechanical vibrations directly and convert them into corresponding electrical currents or voltages."

29. Also, "microphone" by itself is interpreted as an ordinary audio (sound-waves-in-air type) microphone, in contrast to "contact microphone".

Claim Rejections - 35 USC § 103

30. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action: (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

31. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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32. **Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable.**
33. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carver in view of Aronis and Illustrated Oxford Dictionary.
34. Claim 1 is an independent "system" claim with 4 limitations.
35. **C-signal processing system for channelizing the contact recording signals and generating final signals based on the channelized contact recording signals** is disclosed by Carver at abstract "sound recording having right and left information channels... left compensating component... right compensating component".
36. **D-reproduction system for generating audible sound waves based on the final instrument signals** is disclosed by Carver at FIG 4 "stereo player".
37. Carver does not explicitly disclose the remaining limitations.
38. **A-signal generation system for simultaneously generating contact recording signals based on vibrations [from an ensemble]** is disclosed by Aronis at Column 10 lines 1-20 "couple a suitable contact pick-up device to the sounding board... contact microphone, generates suitable electrical signals corresponding to the sounds... individual pick-ups associated with the strings."
39. **B-an ensemble** is disclosed by Illustrated Oxford Dictionary at page 270, which defines ensemble as "a group of actors, dancers, musicians, etc., performing together..."
40. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Aronis and Illustrated Oxford Dictionary to modify Carver. One of ordinary skill in the art would have been motivated to do this in order to obtain clear and individual signals using contact microphones from musicians playing simultaneously in an ensemble.
41. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carver in view of Aronis and Illustrated Oxford Dictionary.
42. Claim 2 depends from Claim 1, with 1 additional limitation.
43. Carver does not explicitly disclose the additional limitation.
44. **ensemble includes a plurality of instruments** is disclosed by Illustrated Oxford Dictionary at page 270, which defines ensemble as "a group of actors, dancers, musicians, etc.,

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performing together...” Similarly, note that Webster defines ensemble as “concerted music of two or more parts... the musicians engaged in the performance of a musical ensemble”.

45. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Aeronis and Illustrated Oxford Dictionary to modify Carver. One of ordinary skill in the art would have been motivated to do this in order to obtain clear and individual signals using contact microphones from musicians playing simultaneously in an ensemble.
46. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carver in view of Aronis and Illustrated Oxford Dictionary.
47. Claim 3 depends from Claim 2, with 1 additional limitation.
48. Carver does not explicitly disclose the additional limitation.
49. **plurality of instruments includes a string quartet** is disclosed by Illustrated Oxford Dictionary at page 270, which defines ensemble as “a group of actors, dancers, musicians, etc., performing together...” Note that Illustrated Oxford Dictionary at page 667 defines quartet as “composition for four voices or instruments... the performers of such a piece”. Thus, string quartets are a subset of ensembles.
50. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Aeronis and Illustrated Oxford Dictionary to modify Carver. One of ordinary skill in the art would have been motivated to do this in order to obtain clear and individual signals using contact microphones from musicians playing simultaneously in a quartet ensemble.
51. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carver in view of Aronis and Illustrated Oxford Dictionary.
52. Claim 4 depends from Claim 2, with 1 additional limitation.
53. Carver does not explicitly disclose the additional limitation.
54. **plurality of contact recording configurations** is disclosed by Aronis “suitable contact pick-up device to the sounding board” and “individual pick-ups associated with the strings”.
55. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Aeronis and Illustrated Oxford Dictionary to modify Carver. One of ordinary skill in the art would have been motivated to do this in order to obtain clear and

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individual signals using contact microphones from musicians playing simultaneously in an ensemble.

56. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carver in view of Aronis and Illustrated Oxford Dictionary and Logue.

57. Claim 5 depends from Claim 4, with 1 additional limitation.

58. Carver does not explicitly disclose the additional limitation.

59. **location governed by a cross-correlation function as measured in different frequency bands** is disclosed by Logue at abstract "cross correlation function".

60. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Aronis and Illustrated Oxford Dictionary and Logue to modify Carver. One of ordinary skill in the art would have been motivated to do this in order to obtain clear and individual signals using contact microphones from musicians playing simultaneously in an ensemble, and would cross-correlate to "efficiently electrically" couple according to Logue abstract.

61. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carver in view of Aronis and Illustrated Oxford Dictionary and Logue and Routine Expedient (MPEP § 2144.04(VI)(C), rearrangement of parts).

62. Claim 6 depends from Claim 5, with 2 additional limitations.

63. Carver does not explicitly disclose the additional limitations.

64. **A-first transducer located below an f-hole, and**

65. **B-second contact transducer located under a bridge** are both disclosed by Routine Expedient (MPEP § 2144.04(VI)(C), rearrangement of parts).

66. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70, 73 (CCPA 1950) states "no invention in shifting the starting switch disclosed by Cannon to a different position since the operation of the device would not thereby be modified", and *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) states "the particular placement provided no novel or unexpected result". See also MPEP § 2144.04(VI)(C). In this claim, changing the location of the transducers (contact microphones) does not modify the operation, does not provide novel results, and does not provide unexpected results. Each contact microphone will directly measure the vibrations of the portion of the musical instrument to which it is mounted.

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67. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Aeronis and Illustrated Oxford Dictionary and Logue and Routine Expedient (MPEP § 2144.04(VI)(C), rearrangement of parts) to modify Carver. One of ordinary skill in the art would have been motivated to do this in order to obtain clear and individual signals using contact microphones from musicians playing simultaneously in an ensemble, and would cross-correlate to “efficiently electrically” couple according to Logue abstract. One of ordinary skill would also be motivated to attach individual contact microphones to directly capture each individual source of sound in an instrument. Aronis teaches toward using multiple pickups at multiple locations to capture individual strings at Column 10 lines 1-20 “individual pick-ups associated with the strings”, as well as capturing the sounding board “suitable contact pick-up device to the sounding board” at Column 10 lines 1-20.
68. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carver in view of Aronis and Illustrated Oxford Dictionary.
69. Claim 7 depends from Claim 1, with 2 additional limitations.
70. A-**a storage system** is disclosed by Carver at Column 1 line 40 “sound recording”.
71. B-**a retrieval system** is disclosed by Carver at Column 1 line 50 “recording is played”.
72. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carver in view of Aronis and Illustrated Oxford Dictionary and Tucker.
73. Claim 8 depends from Claim 7, with 2 additional limitations.
74. Carver does not explicitly disclose the additional limitation.
75. A-**analog to digital conversion system** and
76. B-**storage medium** are both disclosed by Tucker page 1557 “Any sounds can be digitized: music... The input analog signal is sampled at a regular rate and stored. Sampling frequencies vary from 11 to 48 KHz”.
77. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Aeronis and Illustrated Oxford Dictionary and Tucker to modify Carver. One of ordinary skill in the art would have been motivated to do this in order to obtain clear and individual signals using contact microphones from musicians playing simultaneously in an ensemble. Further, one of ordinary skill would have been motivated to digitize the analog signals into binary form so that the signals may be cheaply, accurately, and efficiently

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handled (including storing, recalling, analyzing, and manipulating). Storage and handling of analog signals inherently leads to degradation of the signal, whereas storage and handling of digital information is theoretically perfectly accurate and is practically almost perfectly accurate when using common error recognition and data recovery procedures.

78. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carver in view of Aronis and Illustrated Oxford Dictionary and Tucker.

79. Claim 9 depends from Claim 8, with 4 additional limitations.

80. Carver does not explicitly disclose the additional limitations.

81. **A-equalization system** is disclosed by Aronis at Column 10 line 17 "The electrical signals then can be amplified, modulated, processed and otherwise utilized".

82. **B-mixing system** is disclosed by Aronis at Column 10 line 17 "The electrical signals then can be amplified, modulated, processed and otherwise utilized".

83. **C-digital to analog conversion system** is inherently disclosed by Tucker page 1557 "Any sounds can be digitized: music... The input analog signal is sampled at a regular rate and stored. Sampling frequencies vary from 11 to 48 KHz". Note that digitizing a sound inherently discloses the reverse process: un-digitizing the sound into an analog output signal to a speaker.

84. **D-amplifier** is disclosed by Aronis at Column 10 line 17 "The electrical signals then can be amplified, modulated, processed and otherwise utilized".

85. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Aronis and Illustrated Oxford Dictionary and Tucker to modify Carver.

One of ordinary skill in the art would have been motivated to do this in order to obtain clear and individual signals using contact microphones from musicians playing simultaneously in an ensemble. Further, one of ordinary skill would have been motivated to digitize the analog signals into binary form so that the signals may be cheaply, accurately, and efficiently handled (including storing, recalling, analyzing, and manipulating). Storage and handling of analog signals inherently leads to degradation of the signal, whereas storage and handling of digital information is theoretically perfectly accurate, and is practically almost perfectly accurate when using common error recognition and data recovery procedures. Additionally, one of ordinary skill in the art would be motivated to apply common audio signal processing

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techniques (equalization, mixing, amplifying) to the individual “raw” recordings in order to improve quality of the final processed product.

86. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carver in view of Aronis and Illustrated Oxford Dictionary and Applicant’s Admission and Sakai.

87. Claim 10 depends from Claim 2, with 2 additional limitations.

88. Carver does not explicitly disclose the additional limitations.

89. **A-each loudspeaker system having a corresponding instrument and generating audible sound waves which approximate a frequency dependence of radiation from front, back and side surfaces of the assigned instrument** is disclosed by Applicant’s Admission at specification page 10 line 17 “well-known theories for the radiation of a piston in an infinite baffle, a polar pattern”.

90. **B-a means for simulating musician absorption of the audible sound waves** is disclosed by Sakai Column 2 line 17 “sound absorber simulates a human being”.

91. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Aronis and Illustrated Oxford Dictionary and Applicant’s Admission and Sakai to modify Carver. One of ordinary skill in the art would have been motivated to do this in order to obtain clear and individual signals using contact microphones from musicians playing simultaneously in an ensemble. Further, one of ordinary skill in the art would take into account the absorption and reflection of sound from nearby objects such as human beings and walls in order to more accurately model the frequency spacial relationships.

92. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carver in view of Aronis and Illustrated Oxford Dictionary and Applicant’s Admission and Sakai.

93. Claim 11 depends from Claim 10, with 2 additional limitations.

94. Carver does not explicitly disclose the additional limitation.

95. **A-front driver having a predetermined front piston diameter** is disclosed by Applicant’s Admission at specification page 10 line 17 “well-known theories for the radiation of a piston in an infinite baffle, a polar pattern”.

96. **B-back driver having a predetermined rear piston diameter** is disclosed by Applicant’s Admission at specification page 10 line 17 “well-known theories for the radiation of a piston in an infinite baffle, a polar pattern”.

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97. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Aronis and Illustrated Oxford Dictionary and Applicant's Admission and Sakai to modify Carver. One of ordinary skill in the art would have been motivated to do this in order to obtain clear and individual signals using contact microphones from musicians playing simultaneously in an ensemble. Further, one of ordinary skill in the art would take into account the absorption and reflection of sound from nearby objects such as human beings and walls in order to more accurately model the frequency spacial relationships.
98. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carver in view of Aronis and Illustrated Oxford Dictionary.
99. Claim 12 is an independent "method" claim with 4 limitations.
100. Claim 12 "method" limitations are analogous to the Claim 1 "system" limitations, and thus is rejected for the same reasons.
101. Similarly, Claim 13 is analogous to Claim 2, and is rejected for the same reasons as Claim 2.
102. Similarly, Claim 14 is analogous to Claim 3, and is rejected for the same reasons as Claim 3.
103. Similarly, Claim 15 is analogous to Claim 5, and is rejected for the same reasons as Claim 5.
104. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sims and Illustrated Oxford Dictionary.
105. Claim 16 is an independent "method" claim with 4 limitations.
106. **A-matching a system overall frequency response to a known overall frequency response** is disclosed by Sims Column 1 lines 19-38 "system frequency response... audio frequency equalization".
107. **B-matching a system coarse asymmetrical frequency response to a known coarse asymmetrical frequency response** is disclosed by Sims Column 1 lines 19-38 "system frequency response... audio frequency equalization".
108. **C-approximating a system fine asymmetrical response to a known fine asymmetrical response** is disclosed by Sims Column 1 lines 19-38 "system frequency response... audio frequency equalization".

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109. Sims does not explicitly disclose the remaining limitation.
110. D- **an ensemble** is disclosed by Illustrated Oxford Dictionary at page 270, which defines ensemble as “a group of actors, dancers, musicians, etc., performing together...” Similarly, note that Webster defines ensemble as “concerted music of two or more parts... the musicians engaged in the performance of a musical ensemble”.
111. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Illustrated Oxford Dictionary to modify Sims. One of ordinary skill in the art would have been motivated to do this in order improve the “acoustic match” of the reproduced ensemble music according to Sims Column 1 line 23.
112. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sims and Illustrated Oxford Dictionary and Krauss and Aronis.
113. Claim 17 depends from Claim 16, with 4 additional limitations.
114. Sims does not explicitly disclose the additional limitations.
115. A-**selecting an instrument from the ensemble** is disclosed by Krauss Column 1 “Electrical instruments are in common use both for generating musical tones and for providing standard frequencies for tuning musical instruments... plurality of musical tones”. Note that tuning a musical instrument requires selecting an instrument, playing the scales and tuning the instrument to generate the proper frequency.
116. B-**playing scales on the instrument** is disclosed by Krauss Column 1 “Electrical instruments are in common use both for generating musical tones and for providing standard frequencies for tuning musical instruments... plurality of musical tones”. Note that tuning a musical instrument requires selecting an instrument, playing the scales and tuning the instrument to generate the proper frequency.
117. C-**simultaneously generating a contact recording and a microphone recording based on the ensemble sound pattern** is disclosed by Aronis at Column 10 lines 1-20 “couple a suitable contact pick-up device to the sounding board... contact microphone, generates suitable electrical signals corresponding to the sounds... individual pick-ups associated with the strings.” Note, “microphone” is interpreted as a simple audio microphone, in contrast to a contact microphone.

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118. **D-comparing the spectral characteristics of the contact recording and the microphone recording** is disclosed by Krauss Column 1 “Electrical instruments are in common use both for generating musical tones and for providing standard frequencies for tuning musical instruments... plurality of musical tones”. Note that tuning a musical instrument requires selecting an instrument, playing the scales and tuning the instrument to generate the proper frequency. Note, “microphone” is interpreted as a simple audio microphone, in contrast to a contact microphone.
119. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Illustrated Oxford Dictionary to modify Kraus and Aronis. One of ordinary skill in the art would have been motivated to do this in order improve the “acoustic match” of the reproduced ensemble music according to Sims Column 1 line 23. Further, one of ordinary skill in the art would have been motivated to use standard musical scales to compare the spectral characteristics of the contact microphones to the microphone in order to analyze the functional relationship between the contact microphone signal and the microphone.
120. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sims and Illustrated Oxford Dictionary and Krauss and Aronis.
121. Claim 18 depends from Claim 16, with 4 additional limitations.
122. Sims does not explicitly disclose the additional limitations.
123. **A-selecting an instrument from the ensemble** is disclosed by Krauss Column 1 “Electrical instruments are in common use both for generating musical tones and for providing standard frequencies for tuning musical instruments... plurality of musical tones”. Note that tuning a musical instrument requires selecting an instrument, playing the scales and tuning the instrument to generate the proper frequency.
124. **B-playing scales on the instrument** is disclosed by Krauss Column 1 “Electrical instruments are in common use both for generating musical tones and for providing standard frequencies for tuning musical instruments... plurality of musical tones”. Note that tuning a musical instrument requires selecting an instrument, playing the scales and tuning the instrument to generate the proper frequency.

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125. **C-simultaneously generating a contact recording and a microphone recording based on the ensemble sound pattern** is disclosed by Aronis at Column 10 lines 1-20 “couple a suitable contact pick-up device to the sounding board... contact microphone, generates suitable electrical signals corresponding to the sounds... individual pick-ups associated with the strings.” Note, “microphone” is interpreted as a simple audio microphone, in contrast to a contact microphone.
126. **D-comparing the spectral characteristics of the contact recording with a predetermined reference spectrum** is disclosed by Krauss Column 1 “Electrical instruments are in common use both for generating musical tones and for providing standard frequencies for tuning musical instruments... plurality of musical tones”. Note that tuning a musical instrument requires selecting an instrument, playing the scales and tuning the instrument to generate the proper frequency. Note, “microphone” is interpreted as a simple audio microphone, in contrast to a contact microphone.
127. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Illustrated Oxford Dictionary to modify Kraus and Aronis. One of ordinary skill in the art would have been motivated to do this in order improve the “acoustic match” of the reproduced ensemble music according to Sims Column 1 line 23. Further, one of ordinary skill in the art would have been motivated to use standard musical scales to compare the spectral characteristics of the contact microphones to the microphone in order to analyze the functional relationship between the contact microphone signal and the microphone.
128. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sims and Illustrated Oxford Dictionary and Krauss and Aronis.
129. Claim 19 depends from Claim 16, with 4 additional limitations.
130. Sims does not explicitly disclose the additional limitations.
131. **A-selecting an instrument from the ensemble** is disclosed by Krauss Column 1 “Electrical instruments are in common use both for generating musical tones and for providing standard frequencies for tuning musical instruments... plurality of musical tones”. Note that tuning a musical instrument requires selecting an instrument, playing the scales and tuning the instrument to generate the proper frequency.

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132. **B-playing scales on the instrument** is disclosed by Krauss Column 1 “Electrical instruments are in common use both for generating musical tones and for providing standard frequencies for tuning musical instruments... plurality of musical tones”. Note that tuning a musical instrument requires selecting an instrument, playing the scales and tuning the instrument to generate the proper frequency.
133. **C-simultaneously generating a contact recording and a microphone recording based on the ensemble sound pattern** is disclosed by Aronis at Column 10 lines 1-20 “couple a suitable contact pick-up device to the sounding board... contact microphone, generates suitable electrical signals corresponding to the sounds... individual pick-ups associated with the strings.” Note, “microphone” is interpreted as a simple audio microphone, in contrast to a contact microphone.
134. **D-manually adjusting spectral characteristics of the contact recording** is disclosed by Krauss Column 1 “Electrical instruments are in common use both for generating musical tones and for providing standard frequencies for tuning musical instruments... plurality of musical tones”. Note that tuning a musical instrument requires selecting an instrument, playing the scales and tuning the instrument to generate the proper frequency. Note, “microphone” is interpreted as a simple audio microphone, in contrast to a contact microphone.
135. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Illustrated Oxford Dictionary to modify Kraus and Aronis. One of ordinary skill in the art would have been motivated to do this in order improve the “acoustic match” of the reproduced ensemble music according to Sims Column 1 line 23. Further, one of ordinary skill in the art would have been motivated to use standard musical scales to compare the spectral characteristics of the contact microphones to the microphone in order to analyze the functional relationship between the contact microphone signal and the microphone.
136. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sims and Illustrated Oxford Dictionary.
137. Claim 19 depends from Claim 16, with 1 additional limitation.
138. Sims does not explicitly disclose the additional limitation.

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139. **the ensemble is a string quartet** is disclosed by Illustrated Oxford Dictionary at page 270, which defines ensemble as “a group of actors, dancers, musicians, etc., performing together...” Note that Illustrated Oxford Dictionary at page 667 defines quartet as “composition for four voices or instruments... the performers of such a piece”. Thus, string quartets are a subset of ensembles.
140. **At the time** the invention was made, it would have been obvious to a person of ordinary skill in the art to use Illustrated Oxford Dictionary to modify Sims. One of ordinary skill in the art would have been motivated to do this in order improve the “acoustic match” of the reproduced ensemble music according to Sims Column 1 line 23.

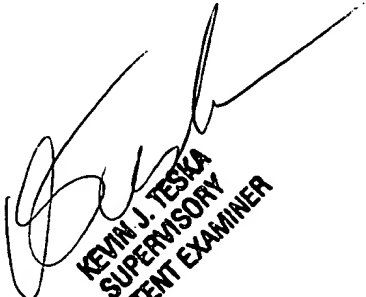
Conclusions

141. Claims 1-20 stand rejected against prior art.
142. Claims 10 and 16 are also rejected under 35 U.S.C. 112, first paragraph.
143. Claims 5, 16, 17, and 19 are also rejected under 35 U.S.C. 112, second paragraph.

Communication

144. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eduardo Garcia-Otero whose telephone number is 703-305-0857. The examiner can normally be reached on Monday through Thursday from 9:00 AM to 7:00 PM.
145. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kevin Teska, can be reached at (703) 305-9704. The fax phone numbers for this group are:
146. (703) 746-7238 --- for communications after a Final Rejection has been made;
147. (703) 746-7239 --- for other official communications; and
148. (703) 746-7240 --- for non-official or draft communications.
149. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist, whose telephone number is (703) 305-3900.

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